

## **BUILDING CHARACTER OF STUDENT IN THE 21<sup>ST</sup> CENTURY BY LEARNING MATHEMATICS**

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### **ABSTRACT**

Education is the main way to form character building all people in accordance with the constitution. At the time, education was done to form human becoming the full gold generation of Indonesian in the 21<sup>st</sup> century. History of education noted that education in Indonesian accordance with the philosophy of Ki Hajar Dewantara as Father of education in Indonesian. There are three philosophies that involve all people must know it. It is namely *ing ngarso sung tulodo, ing madya mangun karso*, and *tut wuri handayani*. Until now in the 21<sup>st</sup> century, it is still eminent. It is task in our country to build character in education of the 21<sup>st</sup> century. It includes five aspects. It is: building human intelligent and well attitude, priority to cooperation than individualism, organizing the literacy of mentality, thinking, feeling, and action, Priority of quality than quantity; and teaching conflict resolution. It is the fifth key of the success of education 21<sup>st</sup> century. It can be a part in education systems and can be taught by math teacher. It must be passed by the gold generation of Indonesian through education system. Learning mathematic is a part of education system to bring all students knowing development science and technology. Learning mathematic also make all students to critical thinking, consistency, and active. Accordingly, learning mathematic in school give students to build their knowledge, skill, and attitude be better than before.

Keywords: character building, gold generation of Indonesian

### **BACKGROUND**

Now, young generation in Indonesia have enormous quantity. Young generation and gold generation is same. Indonesia through independent day 100 years prepare many gold generation to become nations people. Gold generation will be established by education system. Education is something urgent to do. Education is a responsibility by all people. Not only are educators like teacher or lecturer but also all lining profession take a part to successful education. Because, all people who involve education will be back again in public society and do interaction in it. Alike students, the philosophy of education of Indonesia which was conceived by Ki Hajar Dewantara is *ing ngarso sung tulodo, ing madyo mangun karso*, and *tut wurihandayani* always relevant with the goals of curriculum everywhere. Not only in Indonesian but also in other country, for example Japanese using lesson study. Lesson study based on Ki Hadjar Dewantara philosophy.

This philosophy is the background the existence of the goals educational in Indonesia. Ki Hadjar Dewantara gived suggest to all people by philosophy. It is main topic to build character the young generation. Indonesia generation had responsibility to bring Indonesia be

better than before. Building character in the 21<sup>st</sup> century is responsibility to all people. It can be passed by education system. In education system, there is curriculum arranged by government. Oliva (1992: 9) said that “curriculum is the plan or program for all experiences which the learner and encounters under the direction of the school”. It means student in school had programmed. According to Cohen and Harrison (Lovat & Smith, 2003: 9) “on the one hand, curriculum as intention comprises a progressively modifiable plan of areas of learning and growth for an individual or a group of learners focussed upon an educational centre, incorporating a set of objectives, a set of learning experiences and suggestion for their organisation techniques for evaluating learning outcomes. On the other hand, curriculum as reality is what actually happens to the person or persons, arising from a complex network of interactions between people responding to a diverse array of influences, explicit and implicit, human and physical”. Curriculum also arranged learning. It is arranged based on Indonesian National Qualification framework (INQF).

Learning is curriculum imply. One of them is learn mathematic. Learning mathematics is a part education system. many people is not aware how mathematic can build character of students. Building character is a goal curriculum revision. Mental revolution is a part in curriculum. Learning mathematic try to answer this problem. How learning mathematic in this 21<sup>st</sup> century can answer phenomena character people with different culture? In this paper want to explain character building in the 21<sup>st</sup> century by learning mathematics.

## DISCUSSION

Mathematics is the “science of patterns” Steen (NCTM, 2000: 360), representations are the means by which those patterns are recorded and analyzed. As students become mathematically sophisticated, they develop an increasingly large repertoire of mathematical representations and the knowledge of how to use them productively. This knowledge includes choosing specific representations in order to gain particular insights or achieve particular ends. Mathematics mentioned large or small number, it is expressed in scientific notation, their magnitudes are easier to compare and they can more readily be used in computations. Like science, electronic technologies provide access to problems and methods. In order to use the technologies effectively, students will need to become familiar with the representations commonly used in technological settings. For example solving equations or multiplying matrices using a computer algebra system calls for learning how to input and interpret information in formats used by the system. Accordingly the prove, mathematics is a part science and technology development.

### A. Learning Mathematics

Learning mathematics is one of six principle in school mathematics. In learning mathematics NCTM (2000: 11) noted that “students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge”. Learning mathematics involve logical of students. Many people believe that cognitive development and neurological human is coherent and organized. In cognitive neuroscience Piaget’s claim that neurological maturation is a major factor in cognitive development. Whereas, in memory systems some researchers have used brain scans to determine which brain structures affect which cognitive functions and to chart developmental changes. Brain scans provide physical evidence of the location of two separate long-term memory systems – implicit and explicit – that acquire and store different kinds of information Squire (Papalia etc, 2009: 161). Learning mathematics can not separated with cognitive development.

Learning mathematics always make young generation to be critical thinking ‘whirling’ for finding answer the question. Finding answer or accomplishing task in mathematics is something that interesting. Learning mathematics involve the brain of

students more active than learning other subject matter. Learning mathematics situation always make student cannot to sleep and attention their teacher in class. Because, they have inspiration, they have challenge for struggling answer the question. Gold generation who be the students now is Indonesian asset to achieve the aimed constitution.

## **B. Character Building by Learning Mathematics**

Mathematics and curriculum should be coherent. NCTM (2000: 15) noted that “mathematics comprises different topical strands, such as algebra and geometry, but the strands are highly interconnected. The interconnections should be displayed prominently in the curriculum and in instructional materials and lessons. A coherent curriculum effectively organizes and integrates important mathematical ideas so that students can see how the ideas build on, or connect with, other ideas, thus enabling them to develop new understandings and skills”. In the 21<sup>st</sup> century, students face globalization era. Character building in Indonesian generation from different culture is united by curriculum. Learning mathematics in curriculum is connected by teacher in materials and lessons. Studying mathematics make students to critical thinking, consistency, and active. Accordingly, there are five aspects of education which is built by learning mathematics. First, building human intelligent and well attitude. Secondly, priority to cooperation than individualism. Thirdly, organizing the literacy of mentality, thinking, feeling, and action. Fourthly, priority of quality than quantity. Fifthly, teaching conflict resolution.

### **1. Building Human Intelligent and Well-Attitude**

Learn mathematic in school is not also accomplishing the task but also build their self to be intelligent or smart and have well-attitude. Well attitude is coherent by moral people. Moral education is not a new topic in education. Moral education conducted since education was present. Moral education is carried out at all levels and all forms-formal, non-formal, as well as informal for all the citizens of Indonesia. Parents who understand the education will always show love to their child. It is done by parents to their child for following what they do.

Today many kinds of human beings on Earth. There are four categories for human about this. The first is not smart and unwell-attitude, the second is not smart and well-attitude, the third is smart and unwell-attitude, and the fourth is smart and good attitude. The fourth character is outcome from education.

The task of the teacher mathematic in this case is help students to be smart and good attitude by learning mathematics process. When teacher teaching mathematics, indirectly, math teacher give example to students about accomplish the task that character accurate, logical to take conclusion from their answer. Character building is built by accomplish the task and it can be make students realizing to act in daily activities. Not only in accomplish the task but also until they in their home. Moreover, in their environment.

Currently, much people be smart but is not yet showing good character. Many students understand their lessons that they have been studying by the teachers. But most of them have unwell character when they in their home. The teacher shold know how the students attitude when they at home. The teacher must be build a relationship with their parents. Therefore, the teacher is the key to build the smart people and good attitude in 21<sup>st</sup> century.

## **2. Priority to Cooperation than Individualism**

Learning mathematics with model cooperative is one of many methods to build character that priority togetherness than Individualism. Cooperative models that make students cooperate in heterogeneous teams not only gender but also ability of each students. In teams, smart students in a particular subject matter will help her/his friends in her/his teams who has not understanding yet the lessons. This is the strength of cooperation. In addition, the work will be fast finish if we compared to the individual work.

Character education in 21<sup>st</sup> century also emphasize the cooperation attitude. This is done, because to be modern nation each individual should help each other. Character education is to inculcate in young minds the respect for human rights, for cultural pluralism and learning to live together, promote morals and character building as well as unity in diversity (Bhineka Tunggal Ika). It means there is not different between one people and other people. Although, in this country have cultural pluralism. The various ways that can be done by the teacher to make students become an unselfish. The teacher holds an important to make young generation aware of diversity. understanding “Bhineka Tunggal Ika” is not only as a slogan but also as a prospect to reality.

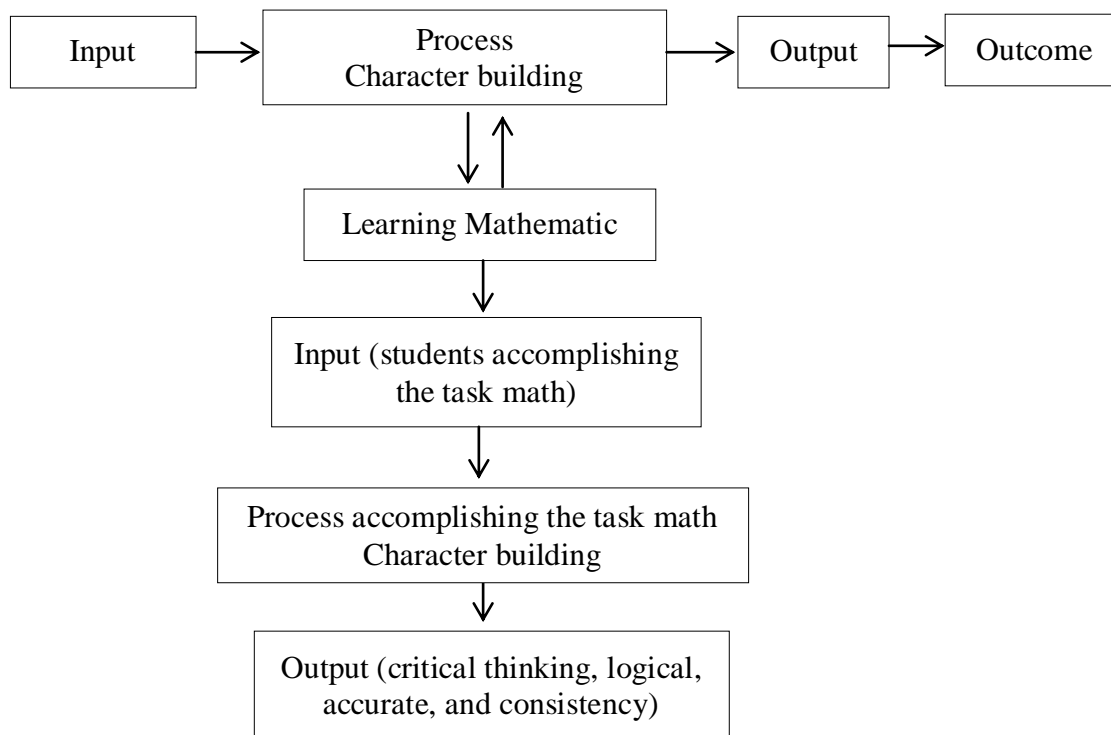
## **3. Organizing the Literacy of Mentality, Thinking, Feeling, and Actions**

Character education 21<sup>st</sup> century assert literacy. By etymology, literacy letter from Latin literatus or litteratus, littera or litera. Litera means understand and responsive to situations and conditions that exist in the environment. Litera must do in our mental, mind, feelings, and actions with friends, parents, brother, sister, family, teachers, and all community environment. Mathematics literacy is possible to change student character will be better than before. The students can feel care, critical, logic in their mind, and consistency to face science and technology transformation.

Mathematics literacy has many implications for the way because mathematics is a basic knowledge in science and technology. Activities students write, create, and accomplish the task, it is also to form litera. The main advantages of a mathematics literacy is aware student in their activity as well as self-control to take conclusion. Accordingly, math teacher must realize that they have many task to make student litera in their daily-life. It can be done by accomplishing the task because the task have one answer of one question. When teachers building character an environment, students understand that is acceptable to struggle with ideas, to make mistakes, and to be unsure. The character building encourages them to participate actively because they know that they will be litera in mental, mind, feelings, and actions if their mathematical thinking is critiqued.

## **4. Priority of quality than quantity**

Character education 21<sup>st</sup> century also priority quality than quantity. The quality is obviously different from quantity. Quantity and value is coherent and quality and mutu is too. The goals of education is human quality increase. Thus, the figure to give structure quality increase in figure 1.



**Figure 1.** Process Quality Increase

The picture of content drawing analysis priority quality than quantity one way or another has to see in connecting process learning math to form character building of students. Learning mathematics process is happened communication to assessing students' knowledge. The focus in classroom when teaching mathematics is trying to make sense of mathematics together. Explaining, questioning, debating, and sense making are thus natural and expected activities. It can be building character of students. To achieve this kind and building character of students, teachers need to establish an atmosphere of mutual trust and respect. Accordingly learning mathematics process is one of them to establish character building of students that having quality.

#### **5. Teaching conflict resolution**

Character education 21<sup>st</sup> century giving the responsibility to the teachers to be able to resolve conflicts. The teacher have big responsibility to make students solving their problem, nothing problem. Because education is worried about student so that they get something and have everything. Learning mathematics should emerge from all students with the disposition, knowledge, and strategies to deal with the new challenges they will encounter.

### **CONCLUSION AND SUGGESTION**

Character education 21<sup>st</sup> century is relevant to philosophy of education that was conceived by the fathers of education. There are five aspects of education which is built by

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learning mathematics. First, building human intelligent and well attitude. Secondly, priority to cooperation than individualism. Thirdly, organizing the literacy of mentality, thinking, feeling, and action. Fourthly, priority of quality than quantity. Fifthly, teaching conflict resolution. Based on explained, mathematics is a part science and technology development. Character building of student in the 21<sup>st</sup> century can be built by teacher in learning mathematics. Learning mathematic also make all students to critical thinking, consistency, and active. Accordingly, learning mathematic in school give students to build their knowledge, skill, and attitude be better than before.

Based on conclusion, the author give suggestion to the reader for litera in our life because, we life not for today but for tomorrow. We should advise our self before we advise other people. Because to build character must start to our self. Now.

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